

THE FOLLOWING GRADED BEDDING MATERIAL MAY BE USED IN WET TRENCHES:

THE FOLLOWING GRADED BEDDING MATERIAL MUST BE USED IN DRY TRENCHES ONLY:

U.S. STANDARD	PERCENT BY	U.S
SIEVE SIZE	WEIGHT PASSING	SIE\
1.5" 1" 3/4" 3/8" #4 #200	100% 50-90% 30-70% 10-40% 5-25% 0-10%	1/2 #4 #16 #20

U.S. STANDARD	PERCENT BY
SIEVE SIZE	WEIGHT PASSING
1/2"	100%
#4	90-100%
#16	30-75%
#200	0-10%

# SEE NOTES ON PAGE 2

Desik	NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION:	
ALS					DOUGLAS	COUNTY
AD\DEI				TYPICAL SEWER	DATE:	DRAFT
es/AC				TRENCH	DWG:	004
				11(21(3))		C01

# CAD\DETALS\Design Manual\2012\C01.dwg. 10/31/2012 1:47:21 PM

### NOTES:

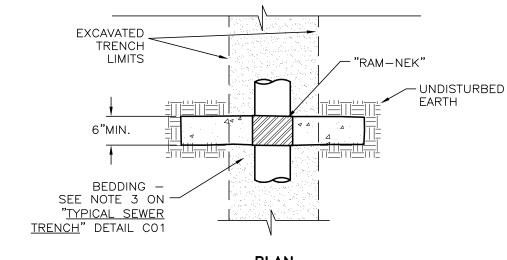
- 1. ALL REQUIREMENTS OF THE SEWER UTILITY ORDINANCE MUST BE MET.
- 2. ANY VARIATION IN BEDDING GRADATIONS SHALL ONLY BE ALLOWED IF GRADATION OF ALTERNATIVE MATERIAL IS SUBMITTED TO AND APPROVED BY THE SEWER UTILITY ENGINEER PRIOR TO CONSTRUCTION.
- 3. TYPE 2 CLASS B AGGREGATE BASE SHALL CONFORM TO SECTION 200 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, AND SHALL BE MECHANICALLY COMPACTED IN CONFORMANCE WITH SECTION 308.05 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- 4. CLASS A, CLASS B AND CLASS E BACKFILL AND BEDDING MATERIAL SHALL CONFORM TO SECTION 200 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. BEDDING AND BACKFILL SHALL BE MECHANICALLY COMPACTED IN CONFORMANCE WITH SECTION 305.10 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- 5. PLACE WARNING TAPE 1-FOOT ABOVE SEWER PIPE. WARNING TAPE SHALL READ "CAUTION SEWER MAIN".
- 6. SEWER PIPE COLOR SHALL BE GREEN FOR GRAVITY SEWER AND PURPLE FOR RECLAIMED WATER.
- 7. 12 GAUGE COPPER-CLAD STEEL WIRE WITH HDPE COATING. SPLICES SHALL BE SNAKEBITE NON-LOCKING TWIST CONNECTOR, SNAKEBITE 3-WAY CONNECTOR OR AS APPROVED BY SEWER UTILITY.
- 8. GRADED BEDDING MATERIAL AS DESCRIBED IN TABLE. COMPACT OR CONSOLIDATE TO PROVIDE PROPER SUPPORT OF PIPE.
- 9. IF 3/4" DRAIN ROCK OR SIMILAR MATERIAL IS USED, CONTRACTOR SHALL WRAP GEOTEXTILE AROUND GRADED BEDDING.

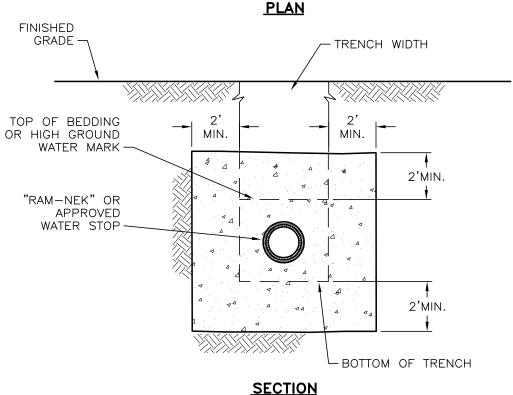
# **FORCE MAIN NOTES:**

- 1. CONSTRUCTION WITHIN DOUGLAS COUNTY RIGHT-OF-WAY MUST BE DONE IN CONFORMANCE WITH THE DOUGLAS COUNTY DESIGN CRITERIA AND IMPROVEMENT STANDARDS MANUAL DIVISION 2 STREETS AND TRAFFIC, CHAPTER 20.830 SITE IMPROVEMENT PERMITS, AND CHAPTER 20.840 ENCROACHMENT PERMITS AS APPLICABLE. WORK IN THE STATE RIGHT-OF-WAY WILL REQUIRE AN ENCROACHMENT PERMIT ISSUED BY THE NEVADA DEPARTMENT OF TRANSPORTATION.
- 2. ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN CONFORMANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- 3. FORCE MAIN BEDDING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF CLASS A BACKFILL AS SPECIFIED IN SUBSECTION 200.03.02 OF THE ORANGE BOOK. MATERIAL SHALL BE DENSIFIED TO 90% RELATIVE COMPACTION.
- 4. BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF CLASS E BACKFILL AS SPECIFIED IN SUBSECTION 200.03.06 OF THE ORANGE BOOK. MATERIAL SHALL BE PLACED IN LIFT THICKNESS SPECIFIED IN SUBSECTION 305.10 OF THE ORANGE BOOK AND DENSIFIED TO 90% RELATIVE COMPACTION.
- 5. ALL EXCAVATIONS SHALL CONFORM TO THE MOST RECENT OSHA REQUIREMENTS. SHORING OR SLOPED CUT MAY BE NECESSARY, BUT THERE WILL BE NO PAYMENT FOR ADDITIONAL EXCAVATION, BEDDING, BACKFILL, OR SHORING.
- 6. INSTALL IDENTIFICATION TAPE MARKED "FORCE MAIN".
- 7. FORCE MAIN SHALL HAVE A MINIMUM OF 4 FEET OF COVER MEASURED FROM PROPOSED FINISH GRADE TO TOP OF PIPE.

PAGE 2 OF 2

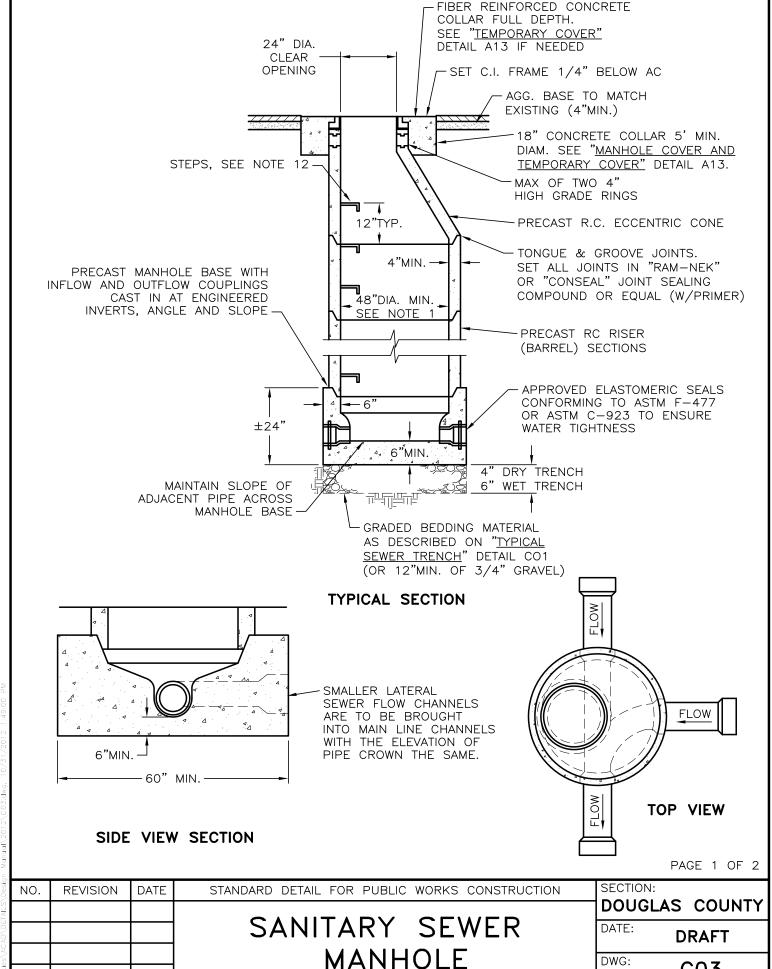
Desi	NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION:	
TAILS					DOUGLAS	COUNTY
AD\DE				TYPICAL SEWER	DATE: C	RAFT
ss\AC				TRFNCH	DWG:	
Utilitie			·	11/214011		C01





- 1. WATER STOPS SHALL BE CONSTRUCTED AT 200-FOOT MAXIMUM SPACING IN GROUND WATER CONDITIONS AND WHERE CLASS C BACKFILL AS BEDDING IS USED, AS DIRECTED BY SEWER UTILITY.
- 2. WRAP PIPE WITH "RAM-NEK" OR EQUIVALENT WHERE PIPE IS EXPOSED TO CONCRETE PRIOR TO POURING.
- 3. USE LIGHT CONCRETE SLURRY BACKFILL TYPE A PER ORANGE BOOK 337.08.01-1. IF DRYWALL IS USED FOR CONCRETE FORMS, IT MAY BE LEFT IN PLACE.

Desig	NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION:	
AILS					DOUGLAS	S COUNTY
0\0ET				WATER STOP	DATE:	DRAFT
s\ACA				WAILK SIOF	DWG:	
Utilitie					J 6.	C02



C03

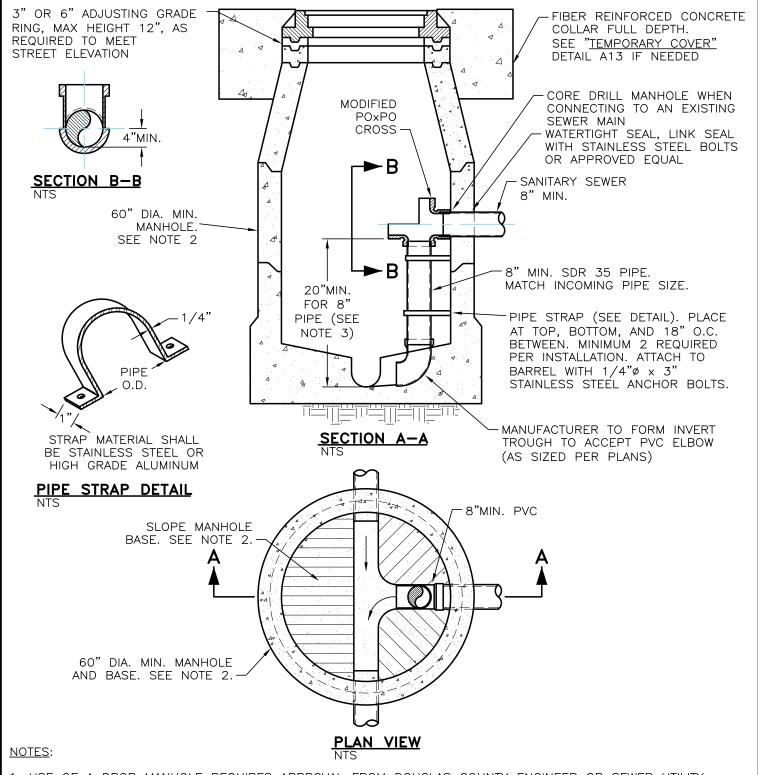
# LS/Design Manual/2012/C03.dwg, 10/31/2012 1:49:40 PM

### NOTES:

- 1. CONTRACTOR SHALL CONTACT AND COORDINATE WITH THE SEWER UTILITY AND ALL OTHER UTILITIES 48 HOURS PRIOR TO CONSTRUCTION.
- 2. ALL CONSTRUCTION SHALL CONFORM TO SEWER UTILITY'S STANDARDS AND NO BACKFILLING WILL BE ALLOWED UNTIL INSPECTED AND APPROVED.
- 3. MANHOLE SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE SECTIONS CONFORMING TO ASTM DESIGNATION C478.
- 4. EXCAVATION FOR MANHOLE MUST BE MADE TO A MINIMUM OF 1-FOOT OUTSIDE OF THE MANHOLE WALL TO PROVIDE FOR ADEQUATE WORKSPACE. SPACE OUTSIDE OF THE MANHOLE SHALL BE BACKFILLED WITH ACCEPTABLE MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 12-INCHES IN DEPTH. EACH LAYER SHALL BE THOROUGHLY COMPACTED TO THE DENSITY OF THE EARTH IN THE ADJACENT TRENCH SECTIONS. (MIN. 90% IN EXISTING OR PROPOSED STREET OR ALLEY RIGHTS-OF-WAY).
- 5. CAST IRON FRAME AND COVER SHALL BE 24—INCH DIAMETER (CLEAR OPENING) AND SHALL BE MANUFACTURED FROM GRAY CAST IRON CONFORMING TO ASTM DESIGNATION: A 48, CLASS 30 AND DESIGNED FOR A MINIMUM HS—20 TRAFFIC LOADING. COVERS AND FRAMES SHALL BE MATCH—MARKED IN PAIRS AND SEATING SURFACES MACHINED SO THAT COVER IS NON—ROCKING. COVERS SHALL HAVE ONE PICK HOLE, AND ONE CENTRALLY LOCATED 1—INCH DIG HOLE. COVERS SHALL HAVE NO "THRU" HOLES.
- 6. ALL BASES MUST BE PRECAST UNLESS OTHERWISE APPROVED BY THE SEWER UTILITY.
- 7. ALL LIFTING HOLES, JOINTS AND OTHER IMPERFECTIONS SHALL BE FILLED WITH NON—SHRINK GROUT. ALL JOINTS AND CONNECTIONS TO NEW OR EXISTING MANHOLES SHALL BE WATERTIGHT.
- 8. CONCRETE FOR CAST-IN-PLACE MANHOLE BASE, IF APPROVED BY THE SEWER UTILITY FOR USE, SHALL CONFORM TO SECTION 202 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- 9. SEWER STUBS FOR FUTURE EXTENSION SHALL BE NO MORE THAN 5-FEET IN LENGTH.
- 10. THE TOP OF INCOMING LATERAL SEWERS SHALL ENTER THE MANHOLE AT AN ELEVATION EQUAL TO THE TOP OF THE MAIN LINE. EXCEPTIONS ONLY BY PRIOR SEWER UTILITY APPROVAL.
- 11. INVERTS SHALL BE FORMED DIRECTLY IN CONCRETE OF MANHOLE BASE AND SHALL BE SMOOTH AND ACCURATELY SHAPED TO A SEMI-CIRCULAR BOTTOM CONFORMING TO THE INSIDE OF THE ADJACENT SEWER SECTION. MAINTAIN SLOPE OF ADJACENT PIPELINE ACROSS THE MANHOLE BASE.
- 12. STEPS ARE REQUIRED WHERE MANHOLE DEPTH IS 54-INCHES (4'-6") OR GREATER; STEPS SHALL BE ALIGNED VERTICALLY (1-INCH MAX VERTICALLY) AND HORIZONTALLY (0.5" TOLERANCE) SO AS TO FORM A CONTINUOUS LADDER, AND SHALL CONFORM WITH THE DESIGN REQUIREMENTS OF THE STATE OF NEVADA, OSHA STANDARDS, SECTION 1910.27 (DEPTH IS RIM ELEV. TO TOP OF PIPE). STEPS SHALL BE STEEL REINFORCED POLYPROPYLENE.
- 13. WHERE MANHOLES ARE NOT LOCATED IN STREETS, PLACE TOP OF MANHOLE 8—INCHES ABOVE THE EXISTING GROUND UNLESS OTHERWISE REQUIRED BY THE SEWER UTILITY. INSTALL THE CONCRETE COLLAR FROM A POINT 6—INCHES OUTSIDE THE TOP OF THE COVER FRAME AND EXTEND A MINIMUM OF 24—INCHES BELOW THE SURROUNDING GROUND SURFACE. TAPER THE CONCRETE COLLAR FROM TOP TO BOTTOM AT A 1:1 SLOPE OR FLATTER.
- 14. PROVIDE 60-INCH DIAMETER OR LARGER MANHOLE FOR PIPES LARGER THAN 15-INCH DIAMETER.
- 15. WHERE GROUNDWATER CONDITIONS ARE PRESENT AND SEWER UTILITY REQUIRES, COAT EXTERIOR OF MANHOLE AS APPROVED BY SEWER UTILITY.
- 16. MANHOLES SHALL BE VACUUM TESTED PRIOR TO BACKFILL.

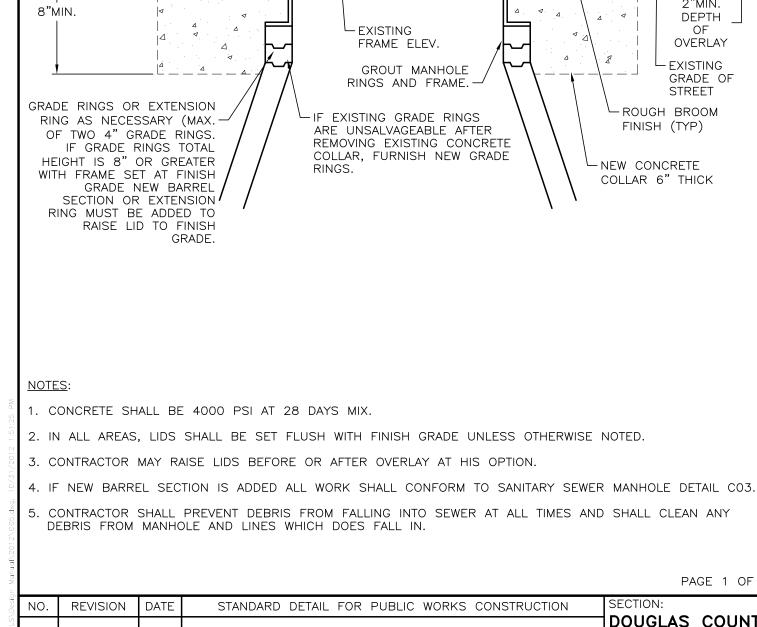
PAGE 2 OF 2

\Desi	NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION:	
TAILS					DOUGLA	S COUNTY
AD\DE				SANITARY SEWER	DATE:	DRAFT
ss/AC				MANHOLE	DWG:	
Utilitie				WANTOLL	J 0.	C03



- 1. USE OF A DROP MANHOLE REQUIRES APPROVAL FROM DOUGLAS COUNTY ENGINEER OR SEWER UTILITY.
- 2. SEE SANITARY SEWER MANHOLE DETAIL CO3 FOR ADDITIONAL NOTES, DIMENSIONS AND DETAILS.
- 3. PROVIDE ADEQUATE PIPE LENGTH TO ALLOW FOR REMOVAL OF MODIFIED CROSS.

NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION:
			<u> </u>	DOUGLAS COUNTY
			DROP MANHOLE	DRAFT DRAFT
			DROF MANHOLE	DWG:
				C04



SANITARY SEWER

MANHOLE RAISING

**PLANTMIX BITUMINOUS** 

PAVEMENT

PATCH -

44

FINISH GRADE.

OF OVERLAY

REMOVE EXISTING CONCRETE COLLAR AND GRADE RINGS AS NECESSARY 5.0'± DIAMETER REINSTALL AFTER RAISING (5.0' MIN. DIA.)

-SET C.I. FRAME AND LID

1/8" MAX. BELOW FINISH GRADE

NEAT VERTICAL CUT. TACK COAT

2"MIN.

DEPTH OF

**OVERLAY** 

GRADE OF

PAGE 1 OF 1

DOUGLAS COUNTY

DRAFT

C05

SECTION:

DATE:

DWG:

**EXISTING** 

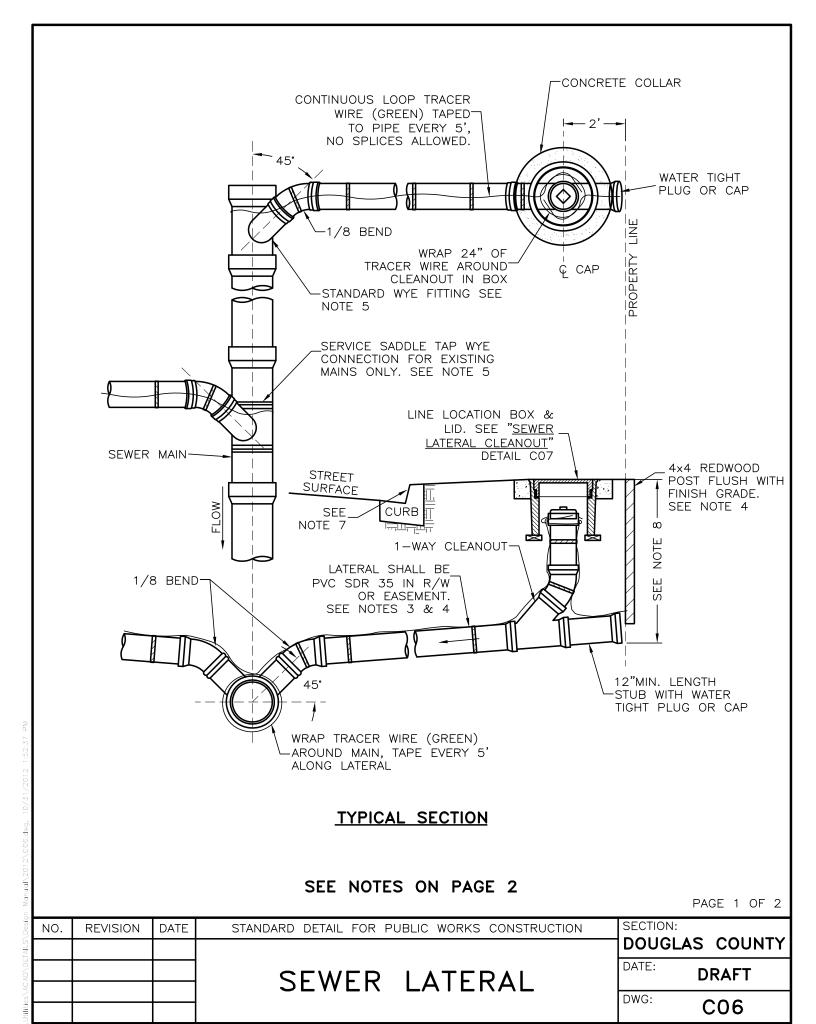
STREET

ROUGH BROOM

FINISH (TYP)

NEW CONCRETE

COLLAR 6" THICK



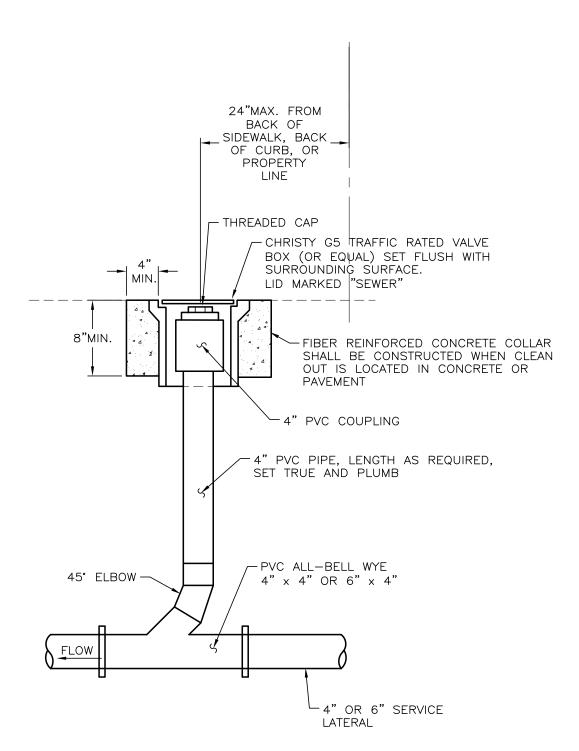
- 1. IN NO CASE SHALL A LATERAL CONNECT TO THE SEWER MAIN DIRECTLY ON TOP OR MATCH THE FLOWLINE OF THE PIPE.
- 2. SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 2%. PLANS SHALL INDICATE INVERT ELEVATION REQUIRED TO SERVE PROPERTY AND CLEAR UNDERGROUND OBSTRUCTIONS.
- 3. ALL JOINTS ON SEWER LATERAL PIPE WITHIN THE RIGHT-OF-WAY SHALL BE COMPRESSION TYPE. C900 PVC MAY BE SUBSTITUTED FOR SDR 35 TO MEET NDEP BSDW SEPARATIONS.
- 4. LATERAL SHALL BE PERPENDICULAR TO THE MAIN AND EXTEND TO PROPERTY LINE. WHEN SHOWN ON PLANS TO INSTALL BUILDING SEWER PRIOR TO PUBLIC UTILITIES, INSTALLATION OF BUILDING SEWER IS EXTENDED TO PUBLIC UTILITY EASEMENT LINE AND STANDARD WATERTIGHT PLUG OR CAP AND REDWOOD POST SHALL BE INSTALLED AT EASEMENT LINE.
- 5. USE OF SEWER SERVICE TAP SADDLE CONNECTIONS SHALL NOT BE ALLOWED FOR NEW SEWER MAIN CONSTRUCTION. WHEN A TAP SADDLE CONNECTION IS TO BE USED ON AN EXISTING SEWER MAIN, IT SHALL BE A WYE SADDLE AND BE INSTALLED PER "SEWER SERVICE SADDLE" DETAIL CO7.
- 6. DISCONTINUANCE OF USE OF AN EXISTING SEWER LATERAL REQUIRES ABANDONMENT OF THE LATERAL. CUT, REMOVE 1 FOOT OF EXISTING LATERAL, AND CAP BOTH ENDS OF THE EXISTING SEWER LATERAL TO BE ABANDONED WITHIN 6 INCHES OF THE SEWER MAIN. INSPECTION BY DOUGLAS COUNTY SEWER UTILITY IS REQUIRED PRIOR TO BACKFILL.
- 7. A LETTER "S" SHALL BE STAMPED OR CHISELED INTO FACE OF CURB AT THE LOCATION OF THE LATERAL CROSSING THE CURB LINE, NOT LESS THAN 1-1/2" HIGH AND 3/16" DEEP.
- 8. MINIMUM DEPTH TO TOP OF CURB MEASURED AT LIP. SEE ALSO NOTE 2.

PAGE 2 OF 2

Desig	NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION:	
TAILS					DOUGLAS	COUNTY
AD\DE				SEWER LATERAL	DATE:	DRAFT
ss\AC.				SEWER LAIERAL	DWG:	
Utilitie						C06

AND DISTANCE OF THE WASHINGTON OF THE AND AND ASSOCIATION OF THE ASSO



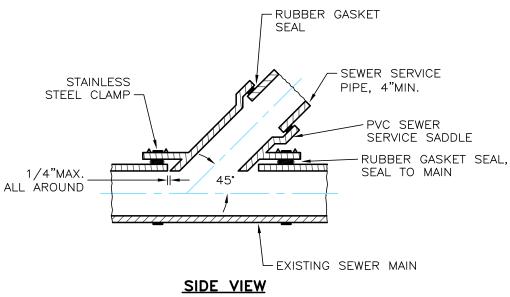


NOTE: ALL JOINTS AND CONNECTIONS SHALL BE WATERTIGHT.

### NOTES:

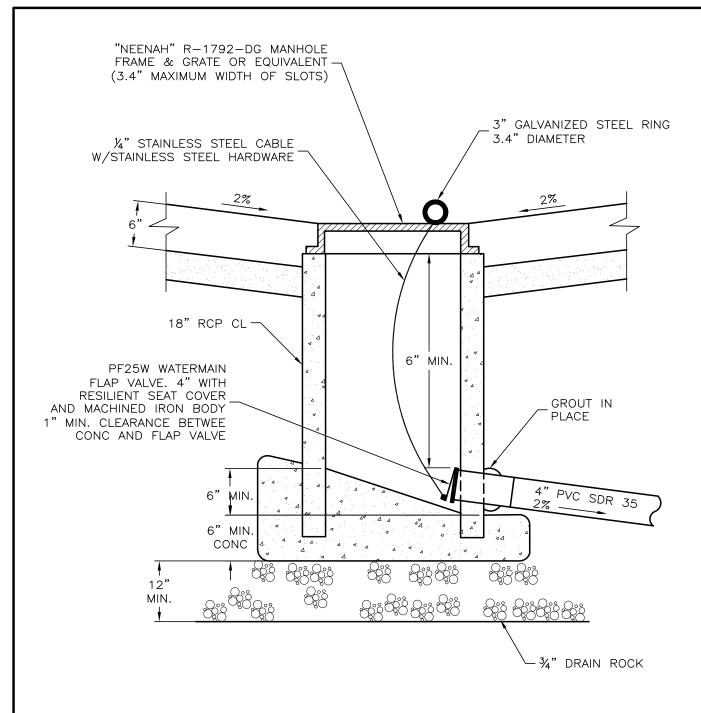
1. CLEANOUTS TO BE PLACED AT EVERY ANGLE GREATER THAN, OR EQUAL TO 45°, EVERY 150' OF LATERAL, AND WITHIN 5' OF BUILDING AND IN CONFORMANCE WITH THE CURRENT EDITION OF THE UNIFORM BUILDING CODE. CLEANOUTS INSTALLED AT ANGLES SHALL BE LOCATED ON THE UPSTREAM SIDE OF THE ANGLE. CLEANOUTS SHALL BE LOCATED AS CLOSE AS PRACTICAL TO THE ANGLE.

NC NC	. REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION:	
TAILS			0514/50   4.750 4.1	DOUGLAS	S COUNTY
AD\DE			SEWER LATERAL	DATE:	DRAFT
ss\AC.			CLEANOUT	DWG:	
Otellitie		·	CLLANOOI	3	C07



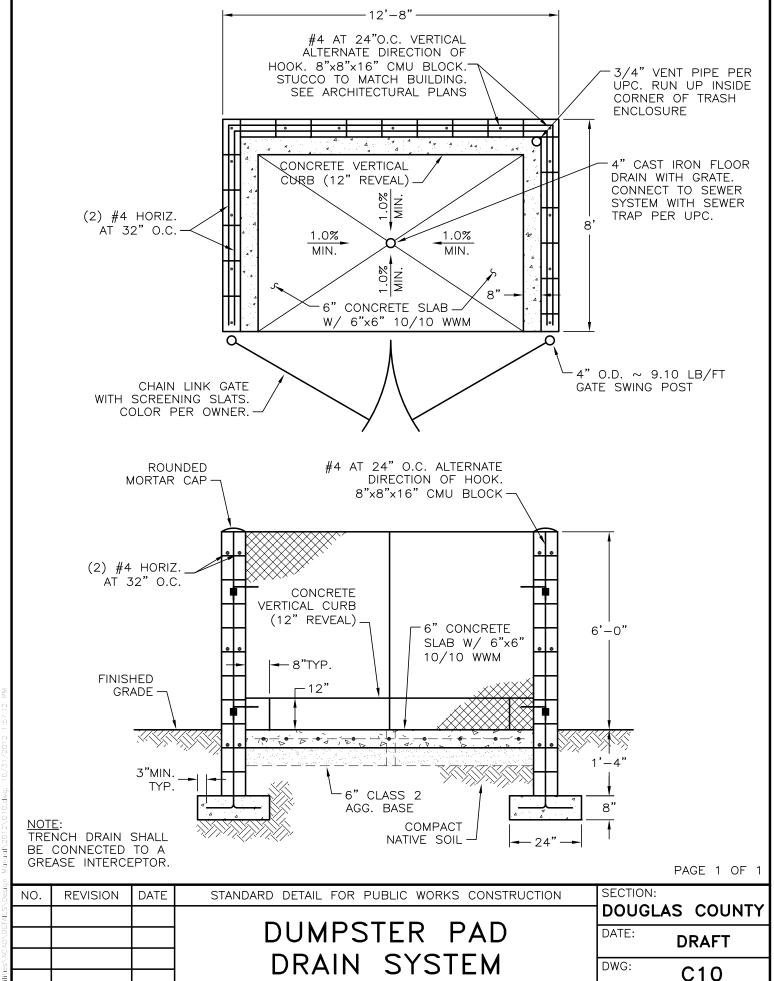
1. SERVICE SADDLE PER SEWER UTILITY APPROVAL.

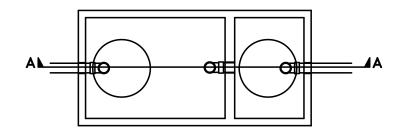
Design	NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONS	STRUCTION	SECTION:	
TAILS						DOUGLAS	COUNTY
AD\DE				SEWER SERVICE SA		DATE: DF	RAFT
ss\AC				SEWER SERVICE SA	ADDLE	DWG:	
Utilitie						C	:08



- 1. TRENCH DRAIN SHALL BE CONNECTED TO A GREASE INTERCEPTOR.
- 2. SIZE OF TRASH ENCLOSURE TO BE DETERMINED BY REFUSE UTILITY.
- 3. SCARIFY AND RECOMPACT TO 90% RELATIVE COMPACTION.
- 4. 4,000 PSI CONCRETE 4% TO 6% AIR ENTRAINMENT.

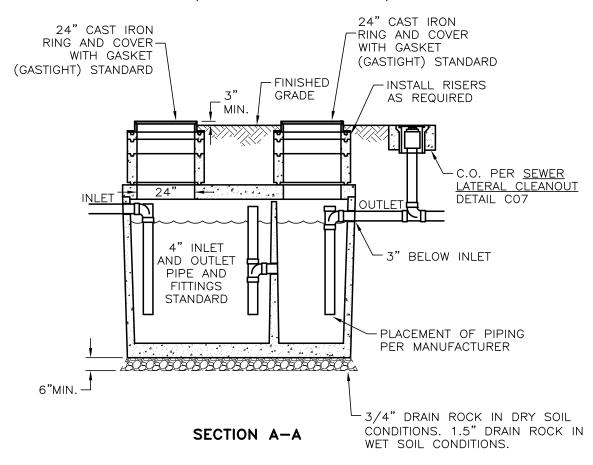
NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	DOUGLAS COUNTY
			DUMPSTER PAD	DATE: DATE:
				DRAFT
			DRAIN SYSTEM	DWG:





# PLAN VIEW

(COVERS & RISERS REMOVED)



### NOTES:

- 1. INSTALL JENSEN PRECAST GREASE INTERCEPTORS (MODELS JP320EE-G THROUGH JP2000EE-G AND JZ2500EE-G THROUGH JZ5000EE-G) WITH H-20 TRAFFIC FROM 1' TO 6' SOIL COVER, OR APPROVED EQUAL.
- 2. REFER TO SEWER UTILITY REQUIREMENTS FOR MINIMUM SIZING.
- 3. ALL CONSTRUCTION PER SEWER UTILITY STANDARDS.
- 4. AVOID PLACING IN PARKING/AC AREAS. IF NECESSARY, PROVIDE DESIGN BY ENGINEER. MOUND IN PARKING/SW AREAS TO CHANNEL DRAINAGE AWAY FROM INTERCEPTOR. LIDS SHALL BE 1" ABOVE FG IN AC/CONCRETE AREAS AND 3" ABOVE FG IN LANDSCAPE AREAS.
- 5. DUMPSTER DRAINS SHALL BE ROUTED THROUGH GREASE INTERCEPTORS.

NC	). REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION:
TAILS				DOUGLAS COUNTY
AD\DE		GREASE INTERCEPTOR	DRAFT DRAFT	
es/AC			GREASE INTERCETION	DWG:
				C11

Project:						Calculated By:								
Addres	s:					Company:								
Instruct	ions:													
The following formula is the Grease Interceptor Sizing Formula as defined per the Uniform Plumbing Code – Appendix H. Follow the steps to determine grease interceptor size.														
	Number o			Waste Flow Rate		Retention Time Storage Factor			Storage Factor		Interce <sub>l</sub> Size			
	Terric	7013		wasie i low Raie		Refermion Time			Storage Factor		3126			
			Х		х			Х		=				
	Char	#1		St #2	_	St #2			Stor. #4		Cton d	Step #5		
Step #1 Step #2			Step #2		Step #3			Step #4		· ·				
Step #6. Recommended I Size Grease Int														
1.	Number of Meals Per Peak Hour										lotes:			
	Recommended Formula:							Number of Meals						
	Seating Capacity Enter Seating			x	٨	Meal Factor		Per Peak Hour						
	Establishment		<del>-</del>	Meal Factor										
	Fast Food				1.33									
	Restaurant				1.0									
	Leisure Dining				0.67									
	Dinner Club				0.5									
2.	Waste Flow Ro	ate								N	lotes:			
	Condition:				Flow Rate									
	A. With a Dishwashing Machine			6 Gallon Flow										
	☐ B. Without a Dishwashing Machine				5 Gallon Flow									
	☐ C. Single Se				2 Gallon Flow									
3.	Retention Time										lotes:			
	☐ Commercial Kitchen Waste													
	Dishwasher 2.5 Hours													
	☐ Single Service Kitchen													
	Single Serving 1.5 Hours													
	Storage Factor													
4.	Kitchen Type Storage Factor													
	A. Fully Equipped Commercial Kitchen													
	Hours of C	: 🗆	8 Hours	1										
	☐ 12 Hours				1.5									
	☐ 16 Hours					2								
	☐ 24 Hours					3								
				B. Single Service K	itchen	1.5								
5.	Calculate Liquid Capacity										lotes:			
	Multiply the values obtained from Steps #1 - #4.													
	The result is the approximate grease interceptor size for this application.													
6.	Select Grease I									<u>N</u>	lotes:			
				liquid capacity from										
				ommended by the i	manufactur	er.								
		MGSD requires a 750 gallon minimum size.										P. C		COLINEY
NO.	REVISION											טטט	GLAS (	COUNTY
	GREASE INTERCEPTOR										ATE:		DRA	FT
								D	WG:			_		
		SIZING WORKSHEET									- •		C1	1
		1												